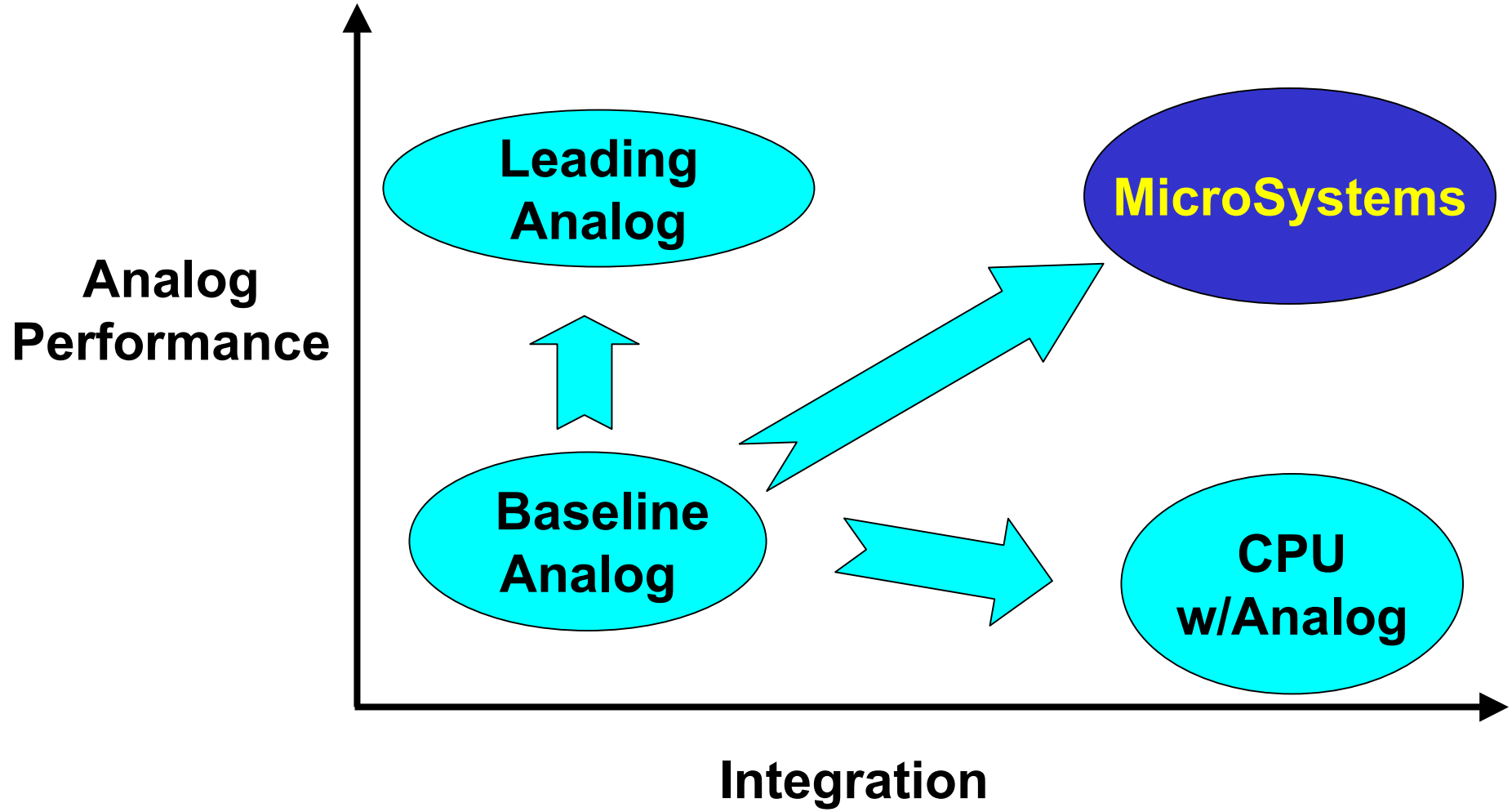
MicroSystem Seminar

Overview

MicroSystems Positioning



MicroSystem Applications

- Weigh Scales
- Flow Meter
- Data Loggers
- Portable DAQ
- Smart Sensors
- Temperature Measurement
- Panel Meter
- Remote Terminal Unit
- Power Meter
- Medical Instruments
- Blood Analysis
- Digital Multimeters
- Pressure Measurement

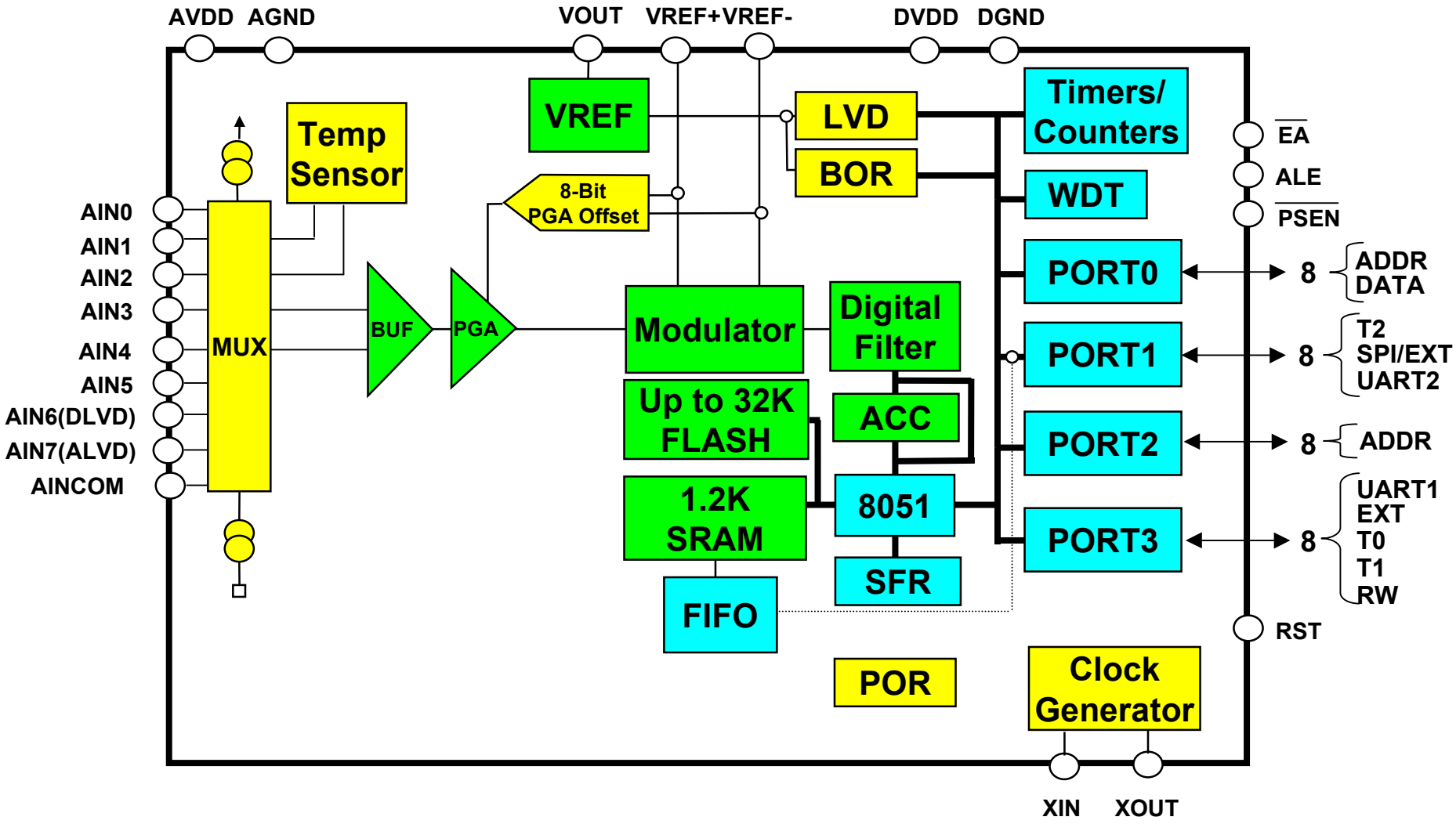
Integrated Solution

- What are the Benefits?
  - Reduces Cost
  - Reduces Research and Development Effort
  - Reduces Integration Time
  - Reduces Debug Time
  - Improves Overall Performance, Reliability, and Quality

MicroSystem Features

- **Families of "Intelligent" Mixed Signal Devices**
  - **Full Compatibility Within Family**
  - **Microcontroller Core**
    - **Enhanced 8051 Core**
  - **Advanced Analog**
    - **24-Bit Delta-Sigma A/D**
    - **16-Bit DAC (MSC1211)**
  - **High Performance Peripherals**

MSC1210 Block Diagram



MSC121x Features

- 8051 Enhanced Core Speed
  - 33 MHz Operation
  - Four Clocks per Instruction Cycle
    - 8.25 MIPS Operation

MSC121x Features

- 8051 Enhanced Core Memory
  - Memory Configurations
    - Up to 32K Bytes Flash Memory
    - 1,280 Bytes RAM
    - External Memory Capability

MSC121x Features

- Multiple Memory Sizes Mean...
  - Migration Path
    - Ability to Add More Features and Functionality
  - Cost Effective Solution
    - You Don’t Pay for What You Don’t Use
  - Higher Performance
    - Code Efficiency
    - Circuit Simplification
- Also..
  - MSC1210 Provides Dual Data Pointers
    - 33+% Faster than Single Data Pointer

MSC121x Features

- Analog Features
  - 24-Bit Delta-Sigma A/D
  - 8 Channel Differential/Single-Ended
  - Buffered Input
  - Analog Input Open Circuit Detect
  - PGA = 1, 2, 4, 8, 16, 32, 64, 128
    - PGA Offset DAC
  - Programmable Data Rate
    - 9 to 1 kSPS
  - On-Chip Voltage Reference
    - 1.25V
    - 2.5V

MSC121x Features

- Peripherals
  - Power On Reset
  - Programmable Brown Out Reset
  - Programmable Low Voltage Detect
  - Programmable Watchdog Timer
  - Multiplexed I/O Pins
  - System Timers
  - Three 16-Bit Timer/Counters
  - Pulse Width Modulator/Tone Generator
  - SPI Port w/FIFO
  - Dual UARTS

MSC121x Features

- Additional Peripherals
  - 32-Bit Accumulator and Shifter
    - Allows for Accumulation of up to 256 A/D Samples
    - Can be Used Independent of A/D
    - Single Instruction Cycle Divide of Accumulation (Shift)

MSC121x Features

- Additional Peripherals
  - 2.7 to 5.25V Operation
  - Low Power: 4 mW (MSC1210)
  - Lower Power: <1mW (MSC1211)
  - HW Breakpoints
    - Break on Address or Data
    - Makes Real-Time Debug Easier
    - Can be Used for Code Profiling

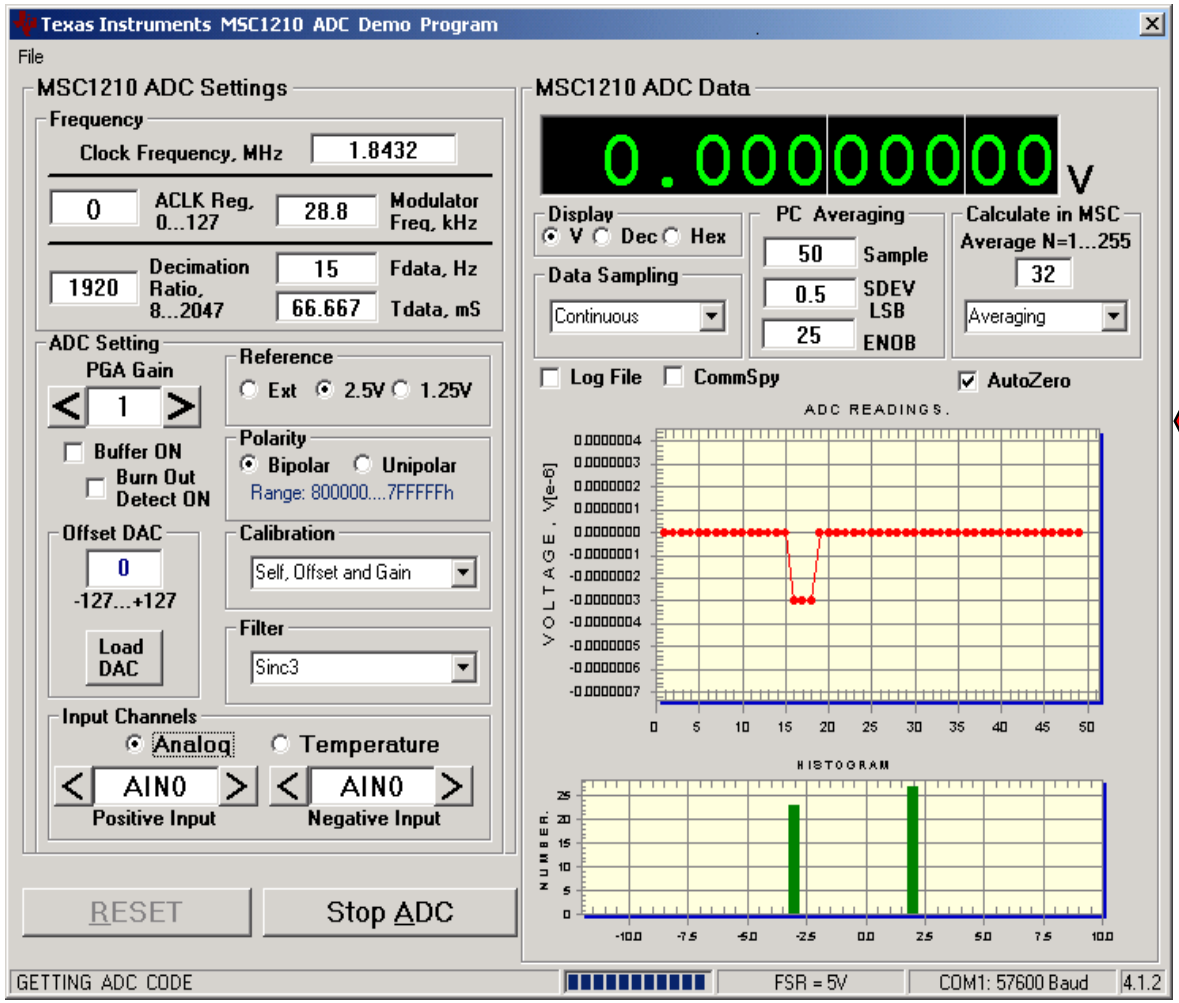
MSC121x Features

- Additional Peripherals
  - Three FLASH Programming Modes
    - Parallel
      - Standard Third Party Support
    - Serial (In-Circuit)
      - Uses UART0
    - User Application
      - Can Emulate Your Own Protocol

MicroSystem Development Tools

- Can Use Established Third Party Integrated Development Environments
- EVMs
  - MSC1210EVM, MSC1211EVM : Full EVM
  - MSC1210-DAQ-EVM : RS-232 Powered
- Ap Notes
  - 18+ On Web
- Software
  - PC-Based Evaluation Program
  - Code Examples
- User's Guides
  - MSC1210
  - EVM

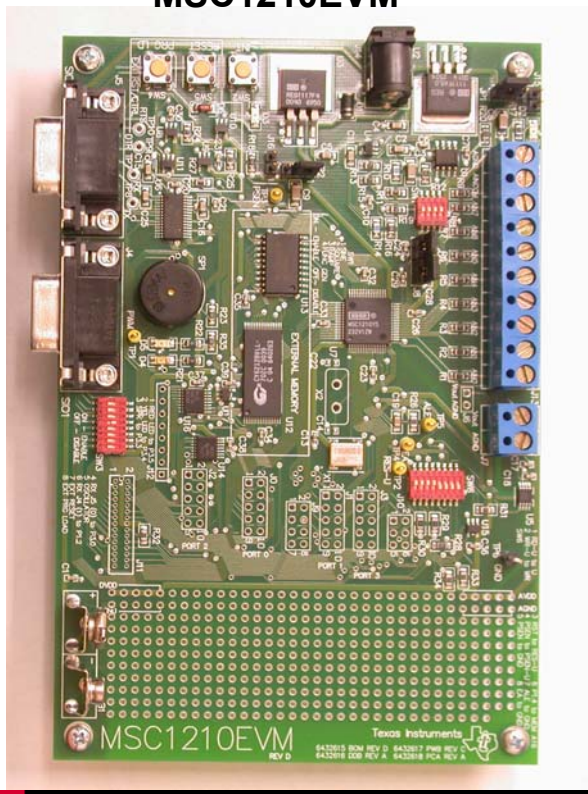
MSC1210 PC Demo



MSC1210-DAQ-EVM

OR

MSC1210EVM



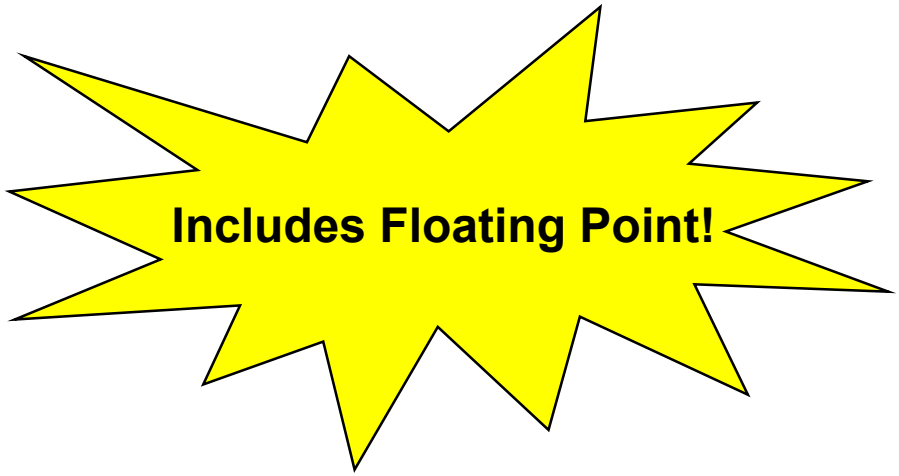
8051 Tools
Compilers

- ANY 8051 Development Tools Can be Used with the MicroSystem Products…
  - SDCC (Free)
  - Dunfield Development Systems ($99+)
  - Rigel ($100)
  - Wickenhaeuser ($110)
  - SPJ ($450)
  - Raisonance ($500+)
  - Hi-Tech ($850+)
  - Avocet ($1295+)
  - Crossware ($1295+)
  - IAR Systems ($1395+)
  - Keil ($1395+)
  - Tasking ($1995)

Development Tools

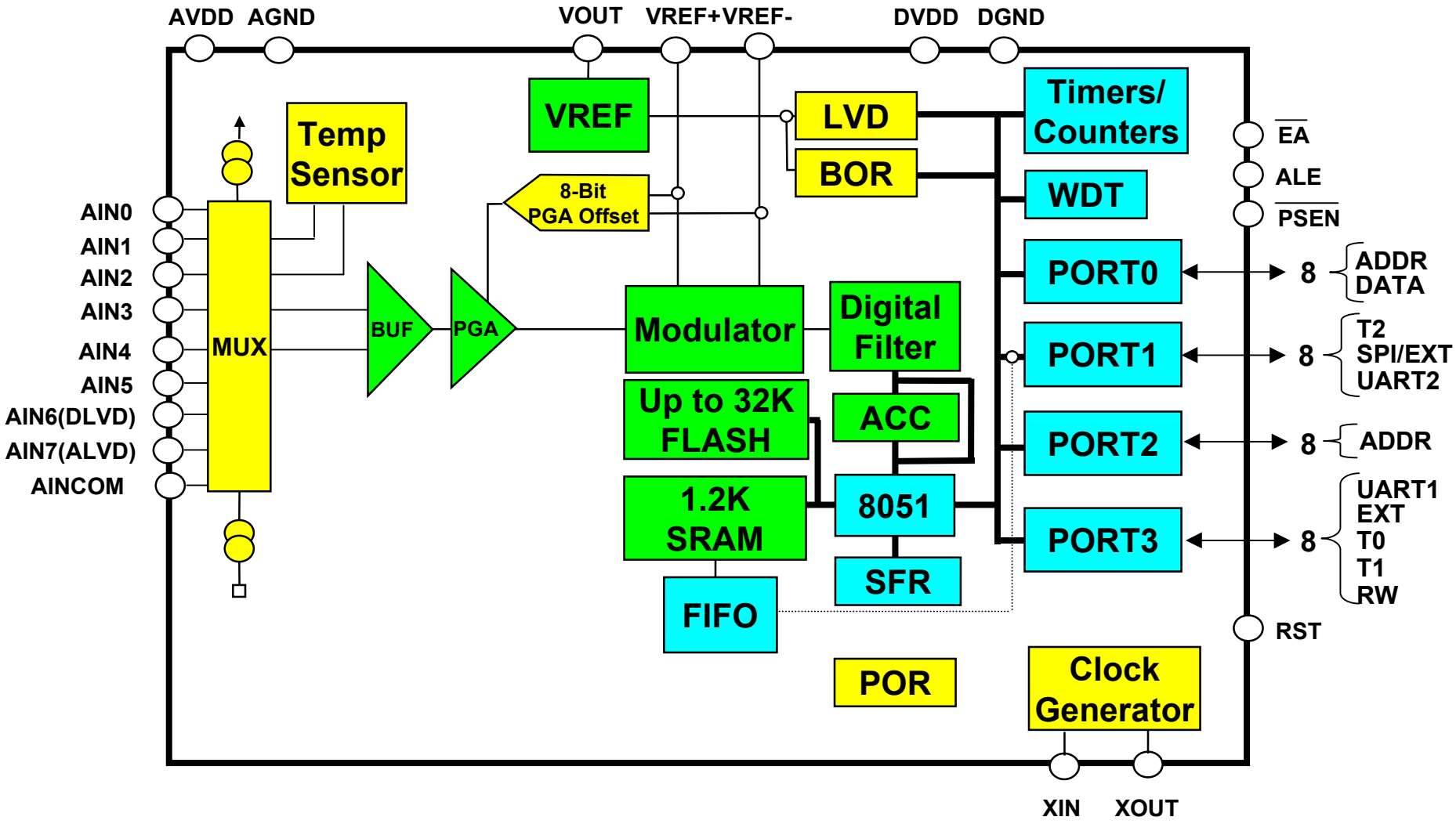
- TI Provided Compiler:
  - 4kB Version (Free)
  - 8kB Version w/MSC1210EVM ($299)
  - 32kB Version w/MSC1210EVM ($499)

http://www.ti.com/msc

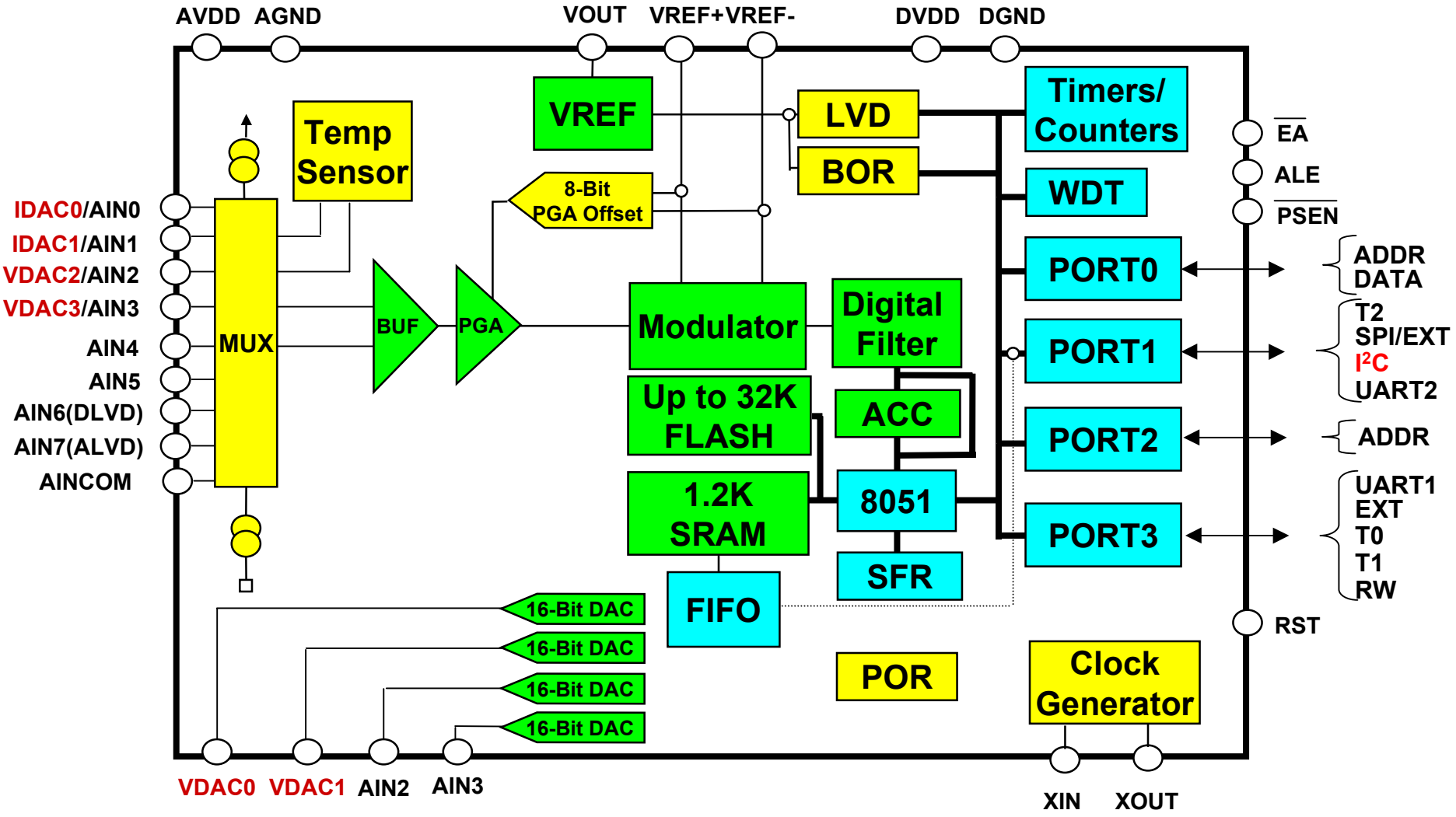


MSC Roadmap

MSC1210 Block Diagram



MSC1211
Block Diagram



MSC1212
Block Diagram